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(54) AN OPTICAL INSTRUMENT MONITORING DNA POLYMERASE CHAIN REACTIONS

(57) An optical instrument (A) for monitoring polymerase chain reaction replication of DNA may include a thermal cycler block (1c) for holding a plurality of vials (1b), each containing a suspension of ingredients that include a fluorescent primary dye. The instrument may include a light source (11) for emitting a source beam, a first means (7) disposed to be receptive of the source beam, a primary focusing means (3) disposed to focus the excitation beam simultaneously into a plurality of suspensions and being receptive of and passing emission beams, a second means (8) disposed to be receptive of emission beams, an emission focusing means (10) for focusing emission beams, a detector, and a processing means for computing concentration of DNA. The optical system being arranged without a beam splitter (6) but with one or more folding mirrors (5), and with excitation and emission beams being on slightly different optical paths angularly.

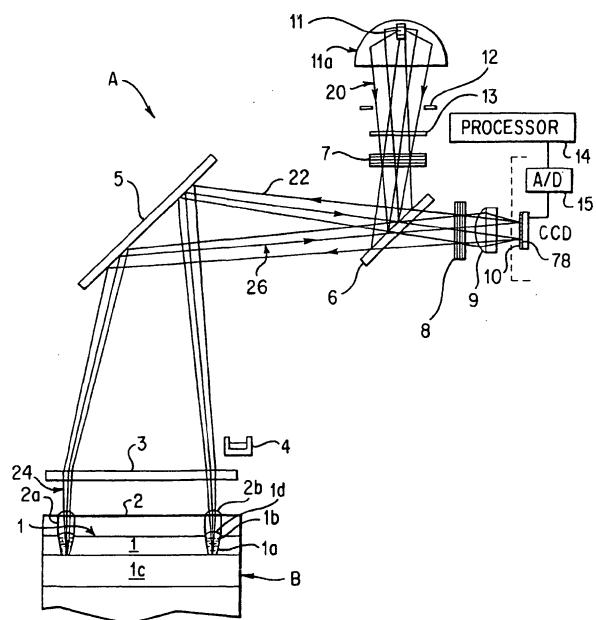


FIG. 1



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	Place of search	Date of completion of the search	Examiner
	Munich	17 March 2017	Mason, William
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X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			



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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

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Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

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No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

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LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

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see sheet B

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All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

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As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

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Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

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None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

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The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).



LACK OF UNITY OF INVENTION
SHEET B

Application Number

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The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

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1. claims: 1-7

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An optical instrument suitable for monitoring polymerase chain reaction replication of DNA comprising details (i.a. in the description) of the optical system relating to the excitation and emission beam paths, the relevant focusing means and filters as well as their spatial arrangement

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2. claims: 8, 9

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An optical instrument suitable for monitoring polymerase chain reaction replication of DNA in which the processing means are configured to retain the detected signals within the saturation limit (dynamic range) of the detector by integrating the signals corresponding to the emission beam for an exposure time which is automatically adjusted to ensure operation in the above range.

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3. claims: 10-15

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An optical instrument suitable for monitoring polymerase chain reaction replication of DNA feature in which a fluorescent reference emitter is provided disposed so as to be viewable by the emission focusing means so as to focus an emission reference beam onto the detector, the detector generating a reference signal, and the processing means computing reference data for normalizing the primary data with the reference data thereby correcting for instrument drift during the monitoring.

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